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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,745	09/29/2003	Amiram Hayardeny	IL20030028US1	1476

7590 12/02/2005
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EXAMINER

KO, DANIEL BOKMIN

ART UNIT PAPER NUMBER

2189

DATE MAILED: 12/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/673,745	Applicant(s) HAYARDENY ET AL.	
	Examiner Daniel B. Ko	Art Unit 2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-81 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-62, 68, 69, 75 and 76 is/are allowed.
- 6) ☒ Claim(s) 63-67, 70-74 and 77-81 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>02/03/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is responsive to the application filed on 09/29/2003. Claims 1-81 have been submitted for examination.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 63-66, 70-73, and 77-80 are rejected under 35 U.S.C. 102(e) as being anticipated by McCann et al. (U.S. Patent Application Publication, US 2003/0061240 A1), hereinafter simply McCann.

Regarding claims 63, 70, and 77, McCann teaches a method for managing a data storage system that includes first and second storage subsystems, the method comprising:

storing data on both the first and the second storage subsystems (Fig. 2, Node A and Node B; page 2, paragraph 11);

receiving first updates to the data at the first storage subsystem (Fig. 2, Unwritten Data Cache 130a), and receiving second updates to the data at the second storage subsystem (Fig. 2, Unwritten Data Cache 130b; page 3, paragraph 30; page 4, paragraph 34); and

performing a symmetrical mirroring process, so as to copy the first updates from the first storage subsystem to the second storage subsystem, and to copy the second updates from the second storage subsystem to the first storage subsystem (page 4, paragraph 37; McCann discloses that when the write operation is successful, the RD driver 150 can do the mirroring operation to other node).

Regarding claims 64, 71, and 78, McCann teaches an asynchronous mirroring process (See abstract).

Regarding claims 65, 72, and 79, receiving first and second data write requests submitted by host processors is inherent. McCann's Fig. 2 shows the network to clients from both Node A and Node B.

Regarding claims 66, 73, and 80, McCann teaches a method comprising:
receiving first and second data requests submitted by first and second host processors to the first and second storage subsystems to access the data stored at first and second locations, respectively, in the data storage system (Fig. 2, Unwritten Data

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Cache 130a and 130b; Network to Clients 10; there can be two clients which is equivalent to first and second host processors);

providing the data from the first storage subsystem to the first host processor after ascertaining that the data stored at the first location on the first storage subsystem are up to date; and providing the data from the second storage subsystem to the second host processor after ascertaining that the data stored at the second location on the second storage subsystem are up to date (page 4, paragraph 34; Since unwritten cache copy the data to other node's cache prior to write to external storage, both data in caches is up to date.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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2. Claims 67, 74, and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCann in view of Crockett et al. (U.S. Patent, 6,772,303 B2), hereinafter simply Crockett.

Regarding claims 67, 74, and 81, McCann do not mentions maintaining a record. However, Crockett teaches a method comprises maintaining a record, indicative of locations at which the data have been updated on the other of the storage subsystems and have not yet been copied in the symmetrical mirroring process (Figure 1, Update Map 118, Figure 5, step 512; column 8, lines 12-25), and wherein providing the data from the first and second storage subsystems comprises determining, responsively to the respective record, whether to request a synchronous update of the data before providing the data to one of the host processors (Figure 6, step 608; column 3, lines 1-10, column 9, lines 7-18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include dynamic resynchronization to preserves data integrity of mirror data (See Crockett, column 3, lines 38-42) to McCann's invention. Also, Crockett's invention helps preserve the smooth storage of data when backup storage is temporarily unavailable by the update map (column 3, lines 42-47).

Allowable Subject Matter

Claims 1-62, 68-69, and 75-76 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel B. Ko whose telephone number is 571-272-8194. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on 571-272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Daniel B. Ko
AU 2189



KEVIN VERBRUGGE
PRIMARY EXAMINER